

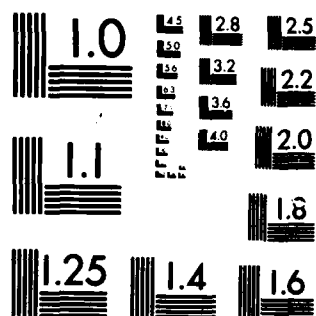
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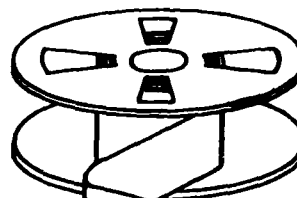
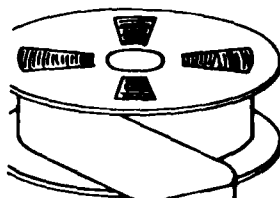


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BORROWING VIDEO TAPES

Player and Monitor Equipment

Most video tapes described on the following pages were made during lectures presented in training courses given at the Hydrologic Engineering Center (HEC). The tapes conform to standard EIA (Electronics Industry Association) TV signals and are 3/4-inch cartridges. All 3/4-inch cartridge players meet EIA standards. During FY 1985, the HEC started recording lectures on 1/2-inch VHS cartridges. Also, the library of 3/4-inch cartridges were copied onto the VHS format. Therefore, all tapes in this catalog are now available in 3/4-inch Umatic (U) or 1/2-inch VHS (S) formats. When ordering tapes indicate on the order form which format is required.

Power supplies vary in foreign countries, thus, the 110-120 AC required for U.S. equipment may not be available. Converters are available from most equipment manufacturers. Also most video tape players will not be compatible with monitors manufactured in other countries and vice versa. For this reason it is advisable that player, monitor, and tapes all be manufactured to U.S. standards.

Tape Descriptions

In the tape descriptions which follow, the lecturer, year in which the tape was made, type of tape and time are identified. The symbols used for type of tape are:

cass (U)	3/4-inch cassette, Scotch UCA (Sony KCA)
vhs (S)	1/2-inch cassette
b/w	presentation is in black and white
color	presentation is in color

Support Materials

A copy of the lecture outline and handout material used in the tape are supplied with each tape if available. All supporting material should be returned with the tapes.

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COMPUTER SYSTEMS

TAPE NUMBER

Basic Concepts and Methods

INTRODUCTION TO THE BASIC METHODS AND PROCEDURES OF EXECUTING INTERACTIVELY ON THE BOEING COMPUTER SYSTEM (BCS)

HEC-253

Introduction to interactive execution; BCS structure capabilities,
requirements, and user options.

(Pabst;1979;cass;b/w;60 min.)

CONCEPTS OF COMPUTER SYSTEMS

HEC-264

The material presented in this tape covers concepts of 1) access
to remote computer systems through remote job entry (RJE) terminals
and interactive (IA) terminal, 2) job processing, and 3) files and
libraries of files. The material is of interest to engineers and ADP
personnel desiring a better understanding of these concepts,
particularly as they apply to Control Data Corporation (CDC)
equipment. Examples are taken from the Lawrence Berkeley Laboratory
(LBL) and Boeing Computer System (BCS) systems.

(Pabst;1978;cass;color;60 min.)

INTRODUCTION TO THE BOEING COMPUTER SYSTEMS

HEC-265

The material presented in this tape is directed to a new user of the
Boeing Computer System (BCS). Basic commands are discussed that will
allow the new user to begin accomplishing simple tasks on the system.
Areas covered include permanent and local file commands, editing, linking
and execution, and miscellaneous job control. It is assumed that the
viewer is familiar with the concepts covered in the tape "Concepts of
Computer Systems."

(Pabst;1978;cass;color;60 min.)

DAM-BREAK ANALYSIS

TAPE NUMBER

Characteristics of Dam-Break Floods

- BASIC CONCEPTS OF DAM BREAKS AND DEVELOPMENT OF DAM-BREAK HYDROGRAPHS** HEC-395
Basic concepts and assumptions; methods of developing the dam-break hydrograph for various modes of failure; envelope curves; failure scenarios.
(Gee;1980;cass;color;51 min.)
- DISTINCTIVE CHARACTERISTICS OF THE DAM-BREAK FLOOD** HEC-149
Aspects of dam break flood that make it behave significantly different from precipitation floods.
(Strelkoff;1976;cass;b/w;60 min. & 18 min.)
- COMPARISON OF DIFFERENT ROUTING METHODS - REQUIREMENTS AND RESULTS** HEC-260
Several hydrologic and hydraulic routing methods are compared. Data requirements; setup time, computer costs, and accuracy are compared; advantages and disadvantages of each method are discussed.
(Gee/MacArthur;1978;cass;b/w;60 min.)
- USE OF THE DIMENSIONLESS GRAPHS FOR ESTIMATING IMPACT OF A DAM-BREAK FLOOD** HEC-151
Simple technique for estimating maximum water depth, discharge, and travel time.
(Strelkoff;1976;cass;b/w;60 min.)

Computer Program HEC-1 for Dam-Break Floods

- APPLICATION OF HEC-1 TO DAM SAFETY ANALYSIS** HEC-257
Basic structure; capabilities; user options, input requirements; output interpretation; coding format.
(Feldman;1978;cass;b/w;60 min. & 10 min.)

Computer Program DAMBRK

- BASIC CONCEPTS OF DAM BREAKS AND DEVELOPMENT OF DAM-BREAK HYDROGRAPHS** HEC-395
Basic concepts and assumptions; methods of developing the dam-break hydrograph for various modes of failure; envelope curves; failure scenarios.
(Gee;1980;cass;color;51 min.)
- INTRODUCTION TO COMPUTER PROGRAM DAMBRK** HEC-396
Nature and purpose of DAMBRK; breach simulation and storage routing capabilities; basis for reservoir outflow determination.
(Peters;1980;cass;color;61 min.)

**TAPE
NUMBER**

- DEVELOPMENT OF CROSS SECTION AND ROUGHNESS DATA FOR DAMBRK** HEC-397
Input required to define geometric and roughness characteristics of cross sections; cross section consistency requirements; cross section spacing; bridges; definition of off-channel storage; conversion of HEC-2 format data; development of composite n values.
(Peters;1980;cass;color;60 min.)
- INPUT REQUIREMENT FOR DAMBRK** HEC-398
Input structure; example input preparation for a basic application.
(Gee;1980;cass;color;61 min.)
- DAMBRK OUTPUT** HEC-399
Types of output; use of the variable JNK to control output; detailed description of output for a basic application.
(Peters;1980;cass;color;62 min.)
- DAMBRK OPTIONS** HEC-400
Multiple-dam, multiple-reach options; simultaneous solution of multiple reaches; input and output illustrations.
(Fread;1980;cass;color;60 min. & 15 min.)
- TROUBLESHOOTING DAMBRK OUTPUT** HEC-402
Causes of program "blow-ups"; common input errors; automatic procedures in DAMBRK to counter nonconvergence; checking procedures.
(Fread;1980;cass;color;60 min.)
- DAMBRK VERSION B (FLOOD PLAIN MODEL)** HEC-403
Capabilities of version B; input and output for version B; sensitivity of flood wave movement to flood plain segmentation.
(Fread;1980;cass;color;60 min. & 15 min.)

Dam Inspection

- A TYPICAL CASE STUDY - FROM FIELD INSPECTION TO REPORTING** HEC-261
Presentation of a real inspection problem from its initiation and field inspection phases to the presentation of results; discussion.
(Fischer;1978;cass;b/w;60 min. & 15 min.)
- TECHNOLOGY TRANSFER AND REPORTING PROCEDURES** HEC-263
Having completed the inspection and analyses, how does one present the important results; what should be included in a report; possible formats to use, timing and teamwork. Technology Transfer - methods of conveying the methods and procedures learned in this course to others; training of State or A/E personnel.
(Fischer;1978;cass;b/w;60 min.)

DATA STORAGE SYSTEM

	<u>TAPE NUMBER</u>
USE OF THE HEC DATA STORAGE SYSTEM FOR WATER AND PLANNING STUDIES Capability of HEC system HECDSS and water control software; application of HECDSS: use of functions, macros and menus. (Pabst;1983;cass;color;62 min.)	HEC-467
CAPABILITIES OF DISPLAY Program options and applications. (Montalvo;1983;cass;color;52 min.)	HEC-470
INTRODUCTION TO DSS Capability of the HEC Data Storage Systems (HECDSS); application to software for planning studies and real-time water control; utility programs; pathname convention. (Charley;1984;VHS;color;60 min.)	HEC-532
EDITING, CATALOGING & INVENTORY OF DATA FILES Use of DSSUTL and DATAS1. (Charley;1983;CA and VHS;color;46 min.)	HEC-513

FLOOD HYDROGRAPH ANALYSIS

TAPE NUMBER

Hydrograph Analysis

INTRODUCTION TO HYDROGRAPH ANALYSIS

HEC-275

Description of hydrologic system components, and their relative importance in analysis, basin precipitation and loss determinations, and the theory, assumptions and general derivation and applications of unit hydrographs and base flow are presented.

(Peters;1978;cass;b/w;62 min., 30 min. & 10 min.)

HYDROLOGIC ANALYSIS OF FLOODS - AN OVERVIEW

HEC-537

Overview of water resource investigations and objectives involving the hydrologic analysis of floods by basin modeling.

(Peters;7/15/85;VHS;color;60 min.)

UNIT HYDROGRAPH CONCEPTS AND CALCULATIONS

HEC-250

Assumptions and theory behind unit hydrograph concepts; for Clark, Snyder, and SCS methods; estimations of loss rate parameters, base flow conditions, and determination of PMF for ungaged basins.

(Peters;1978;cass;b/w;60 min. & 30 min.)

CLARK METHOD FOR DERIVING UNIT HYDROGRAPHS

HEC-002

The problem of determining unit hydrographs for ungaged basins; conceptual models of the instantaneous unit hydrograph; deriving a translation hydrograph; example applications.

(Peters;1974;cass;b/w;69 min.)

SNYDER METHOD FOR DERIVING UNIT HYDROGRAPHS

HEC-003

The Snyder method for determining the peak of a unit hydrograph; shaping the unit hydrograph; example applications.

(Pabst;1974;cass;b/w;69 min.)

BASIN RAINFALL AND LOSS ANALYSIS

HEC-551

Techniques for areal averaging of rainfall and for distributing rainfall in time; the concept of effective rainfall; computer program HEC-1 loss analysis methods.

(Willey;1985;VHS;color;60 min.)

NONUNIFORM LOSS RATE ANALYSIS

HEC-499

HEC-1 exponential loss function; Horton, Holtan and SCS loss functions; concepts of continuous soil moisture accounting.

(Feldman;1983;cass;color;58 min.)

**TAPE
NUMBER**

Flood Routing

INTRODUCTION TO FLOOD ROUTING AND HYDROLOGIC TECHNIQUES FOR FLOOD ROUTING HEC-006

General approaches to flood routing; reservoirs; modified Puls method applied to rivers. Basis for hydrologic methods; Muskingum method. (Peters;1974;cass;b/w;58 min. & 63 min.)

REVIEW OF TRADITIONAL HYDROLOGIC ROUTING METHODS HEC-256

Brief theory and basic equations; continuity of mass; differences with the full equations (hydraulic routing methods); Modified Puls river routing; general hydrologic data requirements. (Bonner;1978;cass;b/w;60 min.)

COMPARISON OF DIFFERENT ROUTING METHODS - REQUIREMENTS AND RESULTS HEC-260

Several hydrologic and hydraulic routing methods are compared. Data requirements; setup time, computer costs, and accuracy are compared; advantages and disadvantages of each method are discussed. (Gee/MacArthur;1978;cass;b/w;60 min.)

Hypothetical Storms

STANDARD PROJECT FLOOD HEC-013

Basis for developing generalized rainfall criteria; criteria for the eastern U.S. for standard project storms; criteria for other areas. (Burnett;1974;cass;b/w;69 min.)

HYPOTHETICAL STORMS HEC-266

Definition and purpose of design storms; types of design storms; use of generalized rainfall criteria to establish an X-year design storm; Standard Project Storm Criteria. (Dyhouse;1979;cass;color;61 min. & 10 min.)

STANDARD PROJECT AND PROBABLE MAXIMUM STORM DETERMINATION HEC-506

Description of the concepts and application of the SPS and the PMS criteria. (Peters;1983;cass;color;58 min.)

Computer Program HEC-1

INTRODUCTION TO HEC-1 FLOOD HYDROGRAPH PACKAGE HEC-500

Flood hydrograph analysis techniques available in HEC-1 including precipitation and loss computations and capabilities for computing runoff. (Bonner;1983;cass;color;53 min.)

TAPE
NUMBER

UNIT HYDROGRAPH AND LOSS RATE COMPUTATION BY COMPUTER

HEC-005

The derivation (optimization) problem; optimization method; program application; computer input for unit hydrograph and loss rate derivation.

(Pabst;1974;cass;b/w;69 min.)

HEC-1 INPUT REQUIREMENTS

HEC-501

Description of general input requirements for determining subbasin runoff, job set-up, options and examples.

(Ely;1983;cass;color;47 min.)

ESTIMATION OF UNIT HYDROGRAPH AND LOSS RATE PARAMETERS

HEC-502

Theory and application of parameter estimation; basin model calibration using HEC-1.

(Ford;1983;cass;color;50 min.)

REGIONALIZATION OF UNIT HYDROGRAPH AND LOSS RATE PARAMETERS

HEC-503

Need for regionalization; approaches to regionalization; nature of regression analysis; selecting watershed characteristics; assessing reliability.

(Feldman;1983;cass;color;54 min.)

BASIN MODELING WITH HEC-1

HEC-008

Purposes of basin modeling; general data requirements; basin topology; steps in model construction.

(Bonner;1974;cass;b/w;60 min.)

DEVELOPMENT OF A RIVER BASIN MODEL USING HEC-1

HEC-505

Description of HEC-1 input required for river basin analysis.

(Peters;1983;cass;color;62 min.)

BASIN MODELING LEADING TO PLAN SELECTION

HEC-511

Multiplan approach with the addition of economic data; HEC-1 input requirements; system optimization capabilities and applications.

(Feldman;1983;cass;color;60 min.)

MULTIPLAN ANALYSIS

HEC-512

Description of basin modeling using multiflood, multiplan approach and HEC-1 input requirements.

(Feldman;1983;cass;color;60 min.)

PLANNING, COMPUTER MODELS AND INTEGRATED USE

HEC-539

Describe how HEC-1 and other HEC models are typically interfaced to perform comprehensive planning studies. Overview the planning process, computer tool usage and discuss the Passaic River Basin study as an example methodology of how to conduct a comprehensive flood control study.

(Davis;1985;VHS;color;60 min.)

**TAPE
NUMBER**

Flood Forecasting

- REAL-TIME PRECIPITATION ANALYSIS** HEC-514
Creation of a subset data file with EXTRCT; the EXTLIST input file for EXTRCT; concepts related to precipitation analysis in real time; purpose and capabilities of computer program PRECIP; input requirements for PRECIP; output from PRECIP; precipitation summary table.
(Peters;1983;CA and VHS;color;66 min.)
- INTRODUCTION TO RUNOFF FORECASTING AND HEC-1F*** HEC-515
Aspects of short term runoff forecasting; approaches and practical considerations; forecast evaluation; characteristics of HEC-1F as a tool for forecasting; criteria for basin subdivision; forecasting as a two-step process; parameter estimation in real time; generating forecasts at downstream control points; zonal estimate of runoff parameters; summary of forecasting procedure.
(Ford;1983;CA;color;51 min.)
- PARAMETER ESTIMATION WITH HEC-1F*** HEC-516
Purpose and role of parameter estimation; forecasting framework; parameters subject to estimating; objective function; parameter constraints; univariate search technique; missing data and other operational features.
(Ford;1983;CA;color;51 min.)
- INPUT/OUTPUT FOR PARAMETER ESTIMATION WITH HEC-1F*** HEC-517
Input requirements for real-time parameter estimation with HEC-1F; use of DSS; example input set; output interpretation; parameter estimation summary table; implementation of HEC-1F with MODCON.
(Ford;1983;CA;color;51 min.)
- INTERACTIVE PROCESSING AND FILE CONTROL** HEC-518
MODCON'S role in defining and controlling analysis tasks. Role of PREFOR.
(Huff;1983;CA and VHS;color;45 min.)
- GENERATION OF BASIN-WIDE RUNOFF FORECASTS WITH HEC-1** HEC-519
Forecast requirements; concept of blending; sequence of computations for basin-wide forecasting; input requirements; zonal designation of parameters; output; forecast summary table; missing data considerations.
(Peters;1983;CA and VHS;color;62 min.)

*These lectures are available on one 153-minute VHS cassette.

GROUND WATER HYDROLOGY

	TAPE NUMBER
<u>Principles of Ground Water</u>	
GEOLOGY AND THE OCCURRENCE OF GROUND WATER - PART 1 Basic terminology and principles used in ground water hydrology and ground water management. (Brown;1979;cass;color;65 min. & 03 min.)	HEC-386
GEOLOGY AND THE OCCURRENCE OF GROUND WATER - PART 2 Explanation of the interaction of surface and subsurface geology and the occurrence of ground water, its distribution, quantity and quality; discuss different kinds of aquifers. (Brown;1979;cass;color;65 min. & 25 min.)	HEC-388
DETERMINATION OF AQUIFER CHARACTERISTICS Ground water as a resource; physical characteristics; hydrologic evaluation of ground water potential. (Scalmanini;1978;cass;b/w;62 min. & 33 min.)	HEC-282
AQUIFER CHARACTERISTICS Methods of determining and analyzing the characteristics (permeability, transmissivity, storage coefficient) of different types of aquifers. (Scalmanini;1979;cass;color/55 min. & 22 min.)	HEC-382
WELL HYDRAULICS Well production considerations; testing and analysis; terminology; determination of aquifer characteristics. (Scalmanini;1978;cass;b/w;62 min. & 25 min.)	HEC-284
THEORY OF GROUND WATER MOVEMENT Theory of ground water movement; dynamics of the flow; balance of forces; statement of continuity and basic energy principles necessary for the description and analysis of ground water movement. (Scalmanini;1979;cass;color;61 min. & 25 min.)	HEC-384
<u>Methods of Analysis</u>	
ANALYSIS OF GROUND WATER EXTRACTION, MINING AND METHODS OF ARTIFICIAL RECHARGE General concepts and components of ground water extraction, mining and methods of artificial recharge. (Scalmanini;1979;cass;color;61 min.)	HEC-391
COMPARISON OF REGIONAL DIFFERENCES IN GROUND WATER PROBLEMS AND SOLUTIONS Regional differences (geological, hydrologic, climatic, and political) in ground water problems and management alternatives associated with these problems are discussed. (Weber;1979;cass;color;60 min. & 26 min.)	HEC-392

**TAPE
NUMBER**

ESTIMATING LAND SUBSIDENCE

HEC-362

Description of the components and importance of the problems associated with land subsidence; causes; analysis; management. (Lofgren;1979;cass;color;70 min. & 20 min.)

DETERMINATION OF AQUIFER YIELD

HEC-364

Definition of aquifer yield and a discussion of how different hydrologic, geologic, and aquifer properties affect its magnitude and determination. Methods of determining aquifer yield; interpretation of results; estimation of ground and surface water dependability. (Helen Peters;1979;cass;color;55 min. & 37 min.)

DETERMINING IMPACTS OF DROUGHT ON GROUND AND SURFACE WATER SOURCES FROM HISTORICAL DATA

HEC-369

Affects of drought on surface and ground water sources; necessary historical data; analysis; management alternatives. (Bean;1979;cass;color;59 min.)

DETERMINATION OF LOCAL GROUND WATER QUALITY AND PROBLEMS ASSOCIATED WITH COASTAL SALT INTRUSION

HEC-370

Basic constituents found in ground water; what data are necessary to analyze water quality; methods of determining ground water quality; what caused salt water intrusion; how can it be analyzed and managed. (Helweg;1979;cass;color;55 min. & 31 min.)

PROBLEMS ASSOCIATED WITH HIGH WATER TABLES

HEC-368

Problems associated with high water tables; causes; effects; regional differences; necessary data; problem analysis; management alternatives. (Bean;1979;cass;color;39 min.)

DETERMINATION OF STORAGE, SUBSURFACE FLOW, AND WATER LEVEL MAPPING

HEC-380

Methods of determining storage, subsurface flow, and water level mapping. (Kelly;1979;cass;color;59 min. & 20 min.)

Ground Water Management

GROUND WATER MANAGEMENT ALTERNATIVES

HEC-372

The importance of ground water management; specific management alternatives for particular kinds of ground water problems. (Coe;1979;cass;color;57 min. & 31 min.)

TAPE
NUMBER

Computer Models

UTILIZATION OF GROUND WATER MODELS FOR PROBLEM ANALYSIS
AND PLANNING

HEC-366

Brief history of ground water modeling; basic concepts, purpose and available tools; advantages and disadvantages of numerical models; necessary data; interpretation of results.

(Lappala;1979;cass;color;55 min. & 54 min.)

CASE STUDY - APPLICATION OF GROUND WATER MODEL

HEC-367

Problem description; setup; necessary data; methods of analysis interpretation of results; discussion of problems during the study of ground water discharges in the Willow Creek Watershed, Northeast Nebraska.

(Lappala;1979;cass;color;54 min.)

Case Studies

EVALUATION OF GROUND WATER DEPLETION AND WATER TABLE DECLINES

HEC-286

Case study of the unconfined aquifer underlying the middle Rio Grande basin in the vicinity of Albuquerque, New Mexico.

(Kelly;1978;cass;b/w;62 min. & 41 min.)

PRESENTATION AND DISCUSSION OF TWO CASE STUDIES (GROUND WATER)

HEC-374

Two unique ground water case studies are presented and discussed with the class.

(Tomlinson/Weber/Wheaton;1979;cass;color;44 min. & 57 min.)

A CASE STUDY OF THE SAN BERNARDINO BASIN WATER SUPPLY PROBLEMS

HEC-376

A case study of the specific water supply problems found in the San Bernardino Valley is presented; discussion of solutions to these problems and water supply management is conducted.

(Rowe;1979;cass;color;59 min. & 57 min.)

ANALYSIS OF COMPLEX MULTIPURPOSE GROUND WATER AND SURFACE WATER SYSTEMS
(SANTA CLARA VALLEY)

HEC-378

Presentation and discussion of a case study in the Santa Clara Valley involving the analysis of complex multipurpose ground water and surface water systems.

(Fowler;1979;cass;color;62 min. & 15 min.)

HYDROPOWER

TAPE NUMBER

Basic Concepts and Methods

- INTRODUCTION TO HYDROPOWER (PART 1) HEC-320
Definition of terms and concepts; capacity, energy and load curves, plant factor, load factor.
(Dalton;1977;cass;b/w;70 min. & 15 min.)
- INTRODUCTION TO HYDROPOWER (PART 2) HEC-326
Supply and demand of power. Types of hydropower development; conventional storage and run of the river plants, and pumped storage facilities.
(Fredrich;1977;cass;b/w;70 min. & 29 min.)
- USE OF SIMULATION TO ESTIMATE POWER POTENTIAL HEC-030
Relationship between flow, head and power potential hydrologic factors affecting hydropower potential; constructing the simulation model; constraints; evaluating performance.
(Fredrich;1974;cass;b/w;68 min.)
- ANALYSIS OF MULTI-PURPOSE POWER PROJECTS HEC-316
General discussion of reasons for doing power studies, accuracy of computations; accumulation of errors.
(Fredrich;1977;cass;b/w;70 min. & 18 min.)
- CONCEPTS AND PROCEDURES FOR HYDROLOGIC STUDIES HEC-318
Sequential routing to determine required storage allocation to satisfy firm energy requirement. Single site, single purpose study.
(Dalton;1977;cass;b/w;70 min. & 12 min.)
- ESTIMATION OF HYDROPOWER POTENTIAL HEC-324
Basic relationship between flow, head and power potential. Hydrologic considerations in determining firm energy.
(Fredrich;1977;cass;b/w;70 min. & 08 min.)

Hydropower Data Files

- BASIC DATA FILES FOR PHASE I HYDROPOWER STUDIES HEC-273
Source and development data files; utilization of files; availability of data to the Corps.
(Pabst;1979;cass;color;57 min. & 09 min.)

Hydropower Economics

- PROCEDURES AND MODELS FOR POWER BENEFIT COMPUTATION HEC-342
Review of standard computations, current and future role of models. Background and applications of Investment Cost Model for thermal plants, Production Cost Models, Hydropower Evaluation Model; case study using CHOPS model.
(Biggerstaff;1977;cass;b/w;70 min.)

TAPE
NUMBER

ECONOMIC ANALYSIS OF SMALL HYDROPOWER INSTALLATIONS

HEC-348

Economic comparisons to coal-fired plants; turbines; manufacturers of small hydro-electric units.

(Willer;1977;cass;b/w;48 min.)

PRINCIPLES OF POWER BENEFIT COMPUTATIONS

HEC-349

Measurement of hydroelectric power benefits alternative concepts; evaluation factors; data resources; standard computations, including annual capacity benefits, energy benefits, at market and at site power benefits, and adjustments to base power benefits.

(Biggerstaff;1977;cass;b/w;70 min. & 33 min.)

ECONOMIC EVALUATION OF HYDROPOWER

HEC-357

Tests of economic rationality; definitions of important terms, derivation of data for hydrologic studies, economic studies and cost estimation; economic evaluation.

(Fredrich;1977;cass;b/w;60 min. & 22 min.)

DETERMINING POWER COSTS SEPARABLE AND ALLOCATED

HEC-359

Description, principles and methods of cost allocation; description of alternative and separable costs; cost allocation when additional purposes are added to existing projects.

(Johnson;1977;cass;b/w;60 min. & 10 min.)

Marketing Hydropower

ROLE OF HYDROPOWER PROJECTS IN REGIONAL AND NATIONAL POWER SUPPLY SYSTEMS

HEC-340

Overview of role of hydropower in meeting electric demand.

Quantitative capacity in regions is discussed, dependability of power and uses of other power sources. Financial and economic costs of alternative power sources. Brief mention of Federal marketing of hydropower and problems associated with optimizing the role of hydropower.

(Trisko;1977;cass;b/w;68 min.)

MARKETING CONSIDERATIONS AND FINANCIAL FEASIBILITY

HEC-353

Discussion of marketing criteria; inclosing area, customer needs, area needs and type of plan. Power sales, power system studies, annual costs, repayment studies, power rates, and marketability of power.

(Weaver;1977;cass;b/w;70 min. & 21 min.)

Small Hydropower

CASE HISTORIES OF SMALL HYDROPOWER INSTALLATIONS

HEC-361

Rollins Dam, Barber Dam, Lake Siskiyou Power Plant, San Antonio Dam, Toston Dam, Camanche Power Project, Merced Irrigation District, South San Joaquin Irrigation District.

(Willer;1977;cass;b/w;36 min.)

	<u>TAPE NUMBER</u>
ECONOMIC ANALYSIS OF SMALL HYDROPOWER INSTALLATIONS Economic comparisons to coal-fired plants; turbines; manufacturers of small hydro-electric units. (Willer;1977;cass;b/w;48 min.)	HEC-348
<u>Computer Program HEC-5</u>	
CAPABILITIES OF HEC-5 FOR HYDROPOWER ANALYSIS HEC-5 options for hydropower analysis; example applications. (Eichert;1983;cass;color;61 min.)	HEC-475
MODELING HYDROPOWER RESERVOIRS Relationship between flow, head, and power potential; hydrologic factors; constructing a simulation model; evaluating performance. (Bonner;1978;cass;b/w;59 min.)	HEC-233
PUMP-STORAGE CONCEPTS (HEC-5) Need for pump-storage operation; basis of operation; typical plant arrangements; and modeling pump operation with HEC-5. (Bonner;1978;cass;b/w;59 min.)	HEC-235
STRATEGIES FOR RELOCATION STUDIES USING HEC-5 Use of HEC-5 to investigate the impact of changes in operating policies, priorities, and storage assignments. (Eichert;1977;cass;b/w;62 min.)	HEC-228
SCREENING TECHNIQUES FOR PHASE I HYDROPOWER STUDIES Description of the techniques; data assumptions; evaluation criteria. (Franc;1979;cass;color;60 min. & 20 min.)	HEC-271
SYSTEM POWER CONCEPTS Benefits and limitations of a system operation; HEC-5 system power routine; added program input requirements. (Bonner;1983;cass;color;60 min.)	HEC-476
HYDROPOWER OPTIMIZATION USING HEC-5 Application to energy and capacity determination; input and output description. (Eichert;1983;cass;color;57 min. & 12 min.)	HEC-477

INTERIOR FLOODING HYDROLOGY

TAPE NUMBER

Basic Concepts and Methods

- EVALUATION OF INTERIOR FLOOD CONTROL - STUDY CONSIDERATIONS HEC-242
Physical characteristics of "interior" areas; illustrations of interior flooding situations; data requirements; type of flood alleviation measures; physical, operational and cost characteristics of gravity drains, pumps, and other measures.
(Dyhouse; 1978; cass; b/w; 61 min. & 24 min.)
- SIMULATION OF AGRICULTURAL INTERIOR FLOOD CONTROL IMPROVEMENTS HEC-244
Capabilities of St. Louis District computer program for continuous period-of-record analysis for interior flood control; theoretical basis for program; input and output; example application.
(Bader; 1978; cass; b/w; 26 min.)

Case Studies

- CASE STUDY - PERRY COUNTY INTERIOR FLOOD CONTROL PROJECT HEC-245
Use of St. Louis District computer program to evaluate semi-independent multisite flood control components (gravity drains and pumping stations) for survey report; program refinement for Phase I GDM.
(Bader; 1978; cass; b/w; 61 min.)

NONSTRUCTURAL PLANNING

	<u>TAPE NUMBER</u>
CONCEPTS AND CHARACTERISTICS OF NONSTRUCTURAL MEASURES Description of the evolution of nonstructural measures in water resources planning; categorization of nonstructural measures for balanced investigations; and important characteristics and considerations of nonstructural measures in the formulation and evaluation process. Overview of analytical tools for evaluating nonstructural measures. (Ford;1984;VHS;color;50 min.)	HEC-523
ECONOMIC CHARACTERISTICS OF NONSTRUCTURAL MEASURES Summary physical characteristics, and relationships between location in flood plain and expected annual damage, comparing costs and flood damage reduction, preliminary screening criteria. (Ford;1984;VHS;color;50 min.)	HEC-524
COMPUTATION OF NED BENEFITS FOR NONSTRUCTURAL MEASURES Review of Corps regulations and reporting requirements for benefit computations, conceptual basis, computations, examples and illustrations. (Johnson;1984;VHS;color;55 min.)	HEC-525
A STRATEGY FOR SYSTEM FORMULATION System formulation concepts and important perspectives, descriptions of a systematic, logic-based procedure for configuring flood plain management measures (structural and nonstructural) into alternative systems. (Ford;1984;VHS;color;53 min.)	HEC-526
OVERVIEW OF EXPECTED ANNUAL FLOOD DAMAGE PROGRAM Overview of EAD program and description of computational concepts and methods, input requirements and output displays. (Kubik;1984;VHS;color;84 min.)	HEC-527
CASE STUDY - NONSTRUCTURAL PLAN FORMULATION FOR PHOENIX AREA Overview of investigation, analytical procedures and use of spatial analysis, implementation issues, status of investigation (Burnham;1984;VHS;color;53 min.)	HEC-528
FLOOD FORECASTING, FLOOD WARNING AND FLOOD EMERGENCY PREPAREDNESS PLANNING (Owen;1984;VHS;color;46 min.)	HEC-529

RESERVOIR SYSTEMS ANALYSIS

TAPE NUMBER

Basic Concepts

USE OF OPTIMIZATION MODELS FOR RESERVOIR ANALYSIS

HEC-472

Application of system analysis tools to reservoir design and operation problems; summary of applicable operation research (OR) tools; review of available "optimization" models of reservoir systems; prognostication of applications of OR models.
(Ford;1983;cass;color;56 min.)

RESERVOIR ROUTING

HEC-538

Discuss HEC-1 reservoir routing capability and limitations.
Describe the capability of HEC-5 for use on controlled structures.
(Hayes;1985;VHS;color;45 min.)

Reservoir Characteristics

METHODS OF AREA-CAPACITY CURVE COMPUTATION

HEC-254

Reservoir characterization, calculation of area-volume capacity curves for reservoirs, methods of estimating area-volume capacity curves for reservoirs with little or no data, reservoir routing using Modified Puls, sources of reservoir data.
(Franc;1978;cass;b/w;60 min.)

Computer Program HEC-5

INTRODUCTION TO HEC-5

HEC-479

An overview of the capabilities of the HEC program for simulation of Flood Control and Conservation Systems.
(Eichert;1983;cass;color;57 min. & 22 min.)

HEC-5 INPUT AND OUTPUT

HEC-466

Input requirements and output examples.
(Hayes;1983;cass;color;62 min.)

MODELING A RESERVOIR SYSTEM WITH HEC-5

HEC-468

Developing a system model; input requirements for HEC-5; output analysis.
(Bonner;1983;cass;color;60 min.)

OPERATION CRITERIA FOR RESERVOIR SYSTEMS

HEC-469

Concepts of multiple reservoir operation; tandem and parallel reservoirs, index levels; equivalent reservoirs.
(Eichert;1983;cass;color;60 min.)

Flood Control Using HEC-5

FLOOD CONTROL SIMULATION FOR ONE RESERVOIR

HEC-530

Data development for a simulation model for flood control operation.
(Hayes;12/4/84;VHS;color;60 min.)

	TAPE NUMBER
<p>HEC-5 FLOOD CONTROL OPTIONS HEC-5 flood control options; forecast interval, contingency factor, system flood control guide curves; variable channel capacities, scheduling options and hinge pool option. (Hayes;1984;VHS;color;60 min.)</p>	HEC-531
<p>HEC-5, EMERGENCY FLOOD Use of the HEC-5 option for gated spillway flood routing; RG card input description; simulation of gated and uncontrolled spillways; output analysis. (Eichert;1984;VHS;color;60 min.)</p>	HEC-533
<p>GATED SPILLWAY FLOOD ROUTING Routing through reservoirs controlled by gated spillways; Modified Puls routing; gate regulation curve computations using computer program SWGRC. (Peters;1984;VHS;color;60 min.)</p>	HEC-534
<p>OPERATION CRITERIA FOR RESERVOIR SYSTEM Concepts of multiple reservoir operation; tandem and parallel reservoirs; index levels, equivalent reservoirs. (Bonner;1983;CA;color;58 min.)</p>	HEC-520
<p>REAL-TIME USE OF HEC-5 Linking forecast and operating models; use of DSS, MODCON and PREOP. Key variables. (Bonner;1983;CA;color;53 min.)</p>	HEC-521
<u>Water Supply Using HEC-5</u>	
<p>RESERVOIR SYSTEM ANALYSIS FOR WATER SUPPLY (HEC-3, HEC-5) Use of simulation models HEC-3 and HEC-5 in water supply planning and operation; analysis of systems of reservoirs; other conservation considerations. (Bonner;1978;cass;b/w;55 min.)</p>	HEC-310
<p>WATER SUPPLY YIELD DETERMINATION USING HEC-5 Use of HEC-5 optimization capabilities to determine yield; determination of storage requirements for a specified demand; example applications. (Eichert;1983;cass;color;60 min. & 19 min.)</p>	HEC-473
<u>Water Quality Using HEC-5Q</u>	
<p>INTRODUCTION TO HEC-5Q An overview of the water quality analysis version of computer program HEC-5. (Willey;1984;VHS;color;60 min)</p>	HEC-535

RIVER HYDRAULICS

TAPE NUMBER

Water Surface Profile Computations

STREAMFLOW PROFILE ANALYSIS AND PLANNING

HEC-110

The role of profile analysis in hydrologic studies and the interface with other components of the planning study are discussed. The relative effect of the various factors of flow, geometry, roughness and local obstructions is also illustrated and discussed.

(Bonner;1975;cass;b/w;70 min.)

WATER SURFACE PROFILE COMPUTATIONS

HEC-014

Classification of open channel flow; energy principles; flow resistance equations; critical depth; Standard Step calculations.

(Peters;1974;cass;b/w;69 min.)

DATA REQUIREMENTS FOR RIVER MODELS

HEC-312

Locating cross sections; cross section detail; loss coefficients; data evaluation; sensitivity of data.

(Bonner;1978;cass;b/w;61 min. & 14 min.)

Computer Program HEC-2

INTRODUCTION TO COMPUTER PROGRAM HEC-2

HEC-407

General program description; data requirements; computational procedure; critical depth solution; bridge losses, utility features.

(Hayes;1979;cass;color;39 min.)

BASIC INPUT REQUIREMENTS FOR HEC-2

HEC-224

This video tape is intended for new users of computer program HEC-2 and provides information on how to prepare input for basic applications.

(Bonner;1974;cass;b/w;33 min.)

OUTPUT ANALYSIS FOR HEC-2

HEC-408

Printout sequence; cross section computation; special notes; profile plot; summary printout; cross section plots; output review.

(Hayes;1979;cass;color;60 min.)

WATER SURFACE PROFILES THROUGH BRIDGES

HEC-020

Nature of flow through bridges; approaches to bridge losses; components of bridge losses; methods available in HEC-2; selection of method; modeling boundaries.

(Bonner;1974;cass;b/w;69 min.)

NORMAL BRIDGE ROUTINE (HEC-2)

HEC-222

Location of cross sections; input requirements; computational procedure; example application.

(Bonner;1977;cass;b/w;70 min. & 15 min.)

	<u>TAPE NUMBER</u>
SPECIAL BRIDGE ROUTINE (HEC-2) Location of cross sections special bridge routine input requirements and computational procedures. (Bonner;1979;cass;color;61 min. & 22 min.)	HEC-269
FLOODWAY DETERMINATION Floodway definitions; general guidelines; computer procedures; program input requirements for floodway calculations. (Oto;1979;cass;color;62 min.)	HEC-536
REVIEW OF HEC-2 INPUT AND OUTPUT Checking survey data; review sequence; head loss coefficients and 'n' values; cross section location; evaluation of bridge modeling, verification from field data. (Dyhouse;1979;cass;b/w;61 min. & 17 min.)	HEC-405
CHANNEL IMPROVEMENT ANALYSIS Use of the HEC-2 Channel Improvement (CHIMP) option; example applications. (Hayes;1982;cass;color;61 min.)	HEC-465
USE OF GRAPHICS WITH HEC-2 Description of the Hydraulics Graphics Package (HGP); example applications. (Montalvo;1985;VHS;color;70 min.)	HEC-553

SEDIMENT TRANSPORT

TAPE NUMBER

Principles and Methods

INTRODUCTION TO FLUVIAL HYDRAULICS

HEC-164

Classification of a stream as alluvial or non-alluvial; the meander of natural streams, definition of terminology such as bed form, meander pattern, alluvial channel, bed material load, wash load, total load, etc.; identification of the sediment problems that must be dealt with at the planning, design, construction or operation phase of water resource projects.

(Nordin;1976;cass;b/w;56 min.)

PRINCIPLES OF SEDIMENT TRANSPORT

HEC 439

Movement of bed material, mechanics of suspension and settling; shear stress; critical tractive force; effect of hydraulic roughness and how it changes with flow condition, geometry, and temperature; important physical properties of fluids, and sediments (structure, chemistry, etc.) effect of hydraulic conditions.

(Arithurai;1980;cass;color;60 min. & 5 min.)

PHYSICAL PROPERTIES OF SEDIMENT

HEC-165

Classification of sediment by grain size; the significance and calculation of fall velocity; factors that affect fall velocity, the density of sediment.

(Nordin;1976;cass;b/w;41 min.)

ANALYSIS OF SEDIMENT DATA

HEC-166

Concentration as a measure of suspended sediment load; the important statistical properties of a sediment sample; variability from one sample to another; weight to volume conversion; the effect of time on unit weight of sediment deposits.

(Nordin;1976;cass;b/w;63 min. & 08 min.)

PRINCIPLES OF SEDIMENT MOVEMENT

HEC-168

Transport of bed material load; the importance of hydraulic roughness in transport theories; secondary currents; critical tractive forces.

(Prasuhn;1976;cass;b/w;60 min. & 20 min.)

INTRODUCTION TO SEDIMENT TRANSPORT EQUATIONS

HEC-443

History, assumptions, limitations and advantages of various methods of computing sediment transport; definition of the different portions of total sediment load; basic data requirements, limitations; qualitative comparison of several different methods from the standpoint of data required, ease of use, accuracy, reliability, etc.; Laursen's, DuBoy's, Yang's Einstein's, and Toffaletti's methods.

(Ariathurai;1980;cass;color;50 min.)

TRANSPORT METHODS

HEC-170

Basic equations; assumptions and limitations; data requirements.

(Prasuhn;1976;cass;b/w;59 min.)

	<u>TAPE NUMBER</u>
<p>TOFFALETI TRANSPORT PROCEDURES AND SYSTEM CHARACTERIZATION</p> <p>Discussion of Toffaleti's methods, example calculations using Toffaleti's method; discussion of the importance of characterizing the prototype system being modeled.</p> <p>(Gee;1980;cass;color;54 min.)</p>	HEC-444
<p>THE TOFFALETI TRANSPORT PROCEDURE</p> <p>Discussion of the relationship to Toffaleti's procedure to Einstein's bed load concept. Data requirements, reliability of results.</p> <p>(Prasuhn;1976;cass;b/w;60 min.)</p>	HEC-171
<p>FLOW RESISTANCE IN ALLUVIAL STREAMS</p> <p>The difficulty of establishing hydraulic roughness values is discussed and current techniques for treating this problem are presented.</p> <p>(Gee;1976;cass;b/w;59 min. & 16 min.)</p>	HEC-185
<p>MEASUREMENT OF SEDIMENT PROPERTIES, QUANTITIES AND TRANSPORT RATES</p> <p>Techniques and equipment for measuring bed and suspended load; methods of obtaining bed material samples; data availability, reliability, and costs; effects of seasons and single events, USGS film on Flow in Alluvial Channels (442)</p> <p>(Childers;1980;cass;color;61 min. & 42 min.)</p>	HEC-441
<p>IN-STREAM DATA COLLECTION</p> <p>Sampling of bed material. Spatial and temporal distribution of samples. Measurement of bed and suspended load. Variability and reliability of field data.</p> <p>(Livesey;1976;cass;b/w;59 min.)</p>	HEC-187
<p>ESTIMATING SEDIMENT YIELD</p> <p>Erosion process; delivery of sediment to streams; methods of determining sediment yield; basic data required; the importance of selecting a time frame appropriate for planning, design, construction or operation scope, the influence of urbanization of yield.</p> <p>(Livesey;1976;cass;b/w;43 min.)</p>	HEC-188
<p>SURFACE EROSION - THE PROCESSES AND CONSEQUENCES</p> <p>Discussion of the physics of overland flow and erosion; gullying; problems and consequences; methods of quantifying various aspects of erosion, soil loss, and mass wasting.</p> <p>(Steffen;1982;cass;color;52 min.)</p>	HEC-488
<p>COMPUTATIONAL METHODS FOR ESTIMATING SOIL LOSS AND SEDIMENT DELIVERY FROM A WATERSHED</p> <p>How to compute soil loss, sediment production rates and delivery ratios; design methods for sediment traps and debris basins.</p> <p>(Steffen;1982;cass;color;59 min.)</p>	HEC-489
<p>SEDIMENT TRANSPORT IN NATURAL STREAMS</p> <p>The natural formation of stream channels flowing through alluvial material is discussed. Concepts of sediment transport and the effects of physical work are stressed.</p> <p>(MacArthur;1978;cass;color;62 min. & 10 min.)</p>	HEC-278

	<u>TAPE NUMBER</u>
<p>PROPERTIES OF NONCOHESIVE SEDIMENT AND CHARACTERISTICS OF ITS MOVEMENT</p> <p>Physical characteristics of sediment; classification by grain size, significance and calculation of settling velocity, material density, initiation of particle motion; Shield's criteria and usage; definition of bed load, suspended, total load, etc.</p> <p>(Krone;1982;cass;color;60 min. & 9 min.)</p>	HEC-481
<p>PROPERTIES OF COHESIVE SEDIMENT AND CHARACTERISTICS OF ITS MOVEMENT</p> <p>Physical and chemical characteristics of cohesive sediments, effects of turbulence and ion concentrations, and methods of determining incipient motion; the occurrence of scour and deposition.</p> <p>(Krone;1982;cass;color;60 min.)</p>	HEC-483
<p>PROCEDURES FOR ORGANIZING AND CONDUCTING A SEDIMENT INVESTIGATION AND DATA-COLLECTION PROGRAM</p> <p>What important sediment characteristics should be measured for various kinds of sediment-related problems and how to establish and conduct a data gathering program, typical costs.</p> <p>(Childers;1983;cass;color;52 min.)</p>	HEC-484
<p>METHODS OF ADDRESSING MULTIDIMENSIONAL SEDIMENT TRANSPORT AND CIRCULATION PROBLEMS</p> <p>Recent developments and applications of multidimensional numerical models to simulate complex sediment transport problems.</p> <p>(Arithurai;1982;cass;color;55 min.)</p>	HEC-486
<p>EVALUATION OF SEDIMENT-RELATED PROBLEMS WITH THE USE OF PHYSICAL MODELS</p> <p>What is a physical model, when are they appropriate, what kinds of problems are they best suited for, how much time and what does it take to conduct a physical model investigation, how can physical models be used in conjunction with numerical models (e.g., hybrid models), methods of estimating local scour problems, effects of model distortion, limitations, research needs; methods of computing similarity and distortion criteria for river and reservoir simulations; computation of sediment material similarity criteria; limitations, problems.</p> <p>(Glover;1982;cass;color;60 min.)</p>	HEC-487
<p>FIELD INVESTIGATION METHODS</p> <p>Details of how to plan, organize and conduct a detailed field inspection in order to identify potential sediment problems.</p> <p>(Vanoni;1982;cass;color;60 min.)</p>	HEC-496
<p>ENVIRONMENTAL CONSIDERATIONS - SOME IMPACTS AND CONSEQUENCES OF SEDIMENT</p> <p>Review of sediment-related problems associated with rivers, lakes and estuaries; consideration of both beneficial and detrimental effects of sediment on water quality and ecology of water bodies.</p> <p>(Goldman;1983;cass;color;60 min. & 50 min.)</p>	HEC-497

TAPE
NUMBER

Navigation Requirements

- DESIGNING FOR NAVIGATION DEPTHS HEC-178
Establishing the bed material load for pre-project conditions, establishing and stabilizing channel alignment; identifying potential trouble spots; determining the impact of changes either to water or to sediment yield or the ability to transport sediment material. Encroaching to deepen channels and increase sediment transport. (Harrison;1976;cass;b/w;60 min. & 15 min.)
- HYDRAULIC MODELS AS A DESIGN AID FOR NAVIGATION HEC-180
Moveable bed models for designing channel alignment and construction works; the importance of the design discharge hydrograph; time scales; interpretation of results; field verification of results. (Harrison;1976;cass;b/w;60 min. & 13 min.)
- AN OVERVIEW OF THE CORPS DREDGING PROGRAM AND BEACH EROSION CONTROL PROJECTS HEC-494
Discussion of problems, expenses, methods, and management. (Hummer;1982;cass;color;60 min.)
- OVERVIEW OF HEC'S DREDGE MATERIAL DISPOSAL MANAGEMENT HEC-495
Discussion of a newly developed dredging management tool called "D2M2" for optimizing use of dredges and disposal areas. (Davis;1982;cass;color;60 min.)

Scour

- LOCALIZED SCOUR HEC-184
Classification of local scour; mechanisms causing scour; predicting and reducing scour. (Fletcher;1976;cass;b/w;26 min.)
- DESIGN OF STABLE SECTIONS HEC-182
Techniques used to stabilize major rivers; types of protection works, sizing of stone and placement techniques for protection works; inspection and evaluation of protection works. (Harrison;1976;cass;b/w;60 min. & 08 min.)
- METHODS OF EROSION CONTROL HEC-490
Procedures for the control of erosion and soil loss due to road construction, development practices, agricultural activities; emergency methods and placement and construction of control structures. (Steffen;1982;cass;color;45 min.)
- STREAMBANK EROSION CONTROL, BANK STABILIZATION AND RIVER TRAINING METHODS HEC-491
MRD's experiences and case histories of river bank stabilization methods and procedures; summary of the Section 32 research program. (Mellema;1982;cass;color;56 min.)
- STABLE CHANNEL DESIGN PROCEDURES HEC-492
Computational methods for evaluating and designing stable earthen channels. (Smith;1982;cass;color;60 min.)

	TAPE NUMBER
PURPOSE, APPLICATION AND GENERAL DESIGN CONSIDERATIONS FOR RIP RAP, GABIONS, LOG CRIBBS AND CONCRETE MATRESSING Where, when and how to use structural protection to minimize river bank erosion; other alternatives. (Smith;1982;cass;color;60 min.)	HEC-493
<u>Reservoir Sedimentation</u>	
RESERVOIR SEDIMENTATION The location of sediment deposits; the magnitude; the influence of hydrology; the influence of the construction of a project on sediment deposition profiles are discussed. (Thomas;1976;cass;b/w;62 min. & 04 min.)	HEC-191
<u>Computer Program HEC-6</u>	
INTRODUCTION TO HEC-6 Basic assumptions, concepts and theories; equations of continuity for sediment; basis for hydraulic computation (HEC-2); numerical solution technique, limitations of model; typical itemized application capabilities (kinds of problems); restate the importance of characterizing the prototype systems. (Gee;1980;cass;color;54 min.)	HEC-445
MATHEMATICAL MODELING OF SCOUR, TRANSPORT AND DEPOSITION OF SEDIMENT MATERIAL The equation of continuity of sediment is discussed and numerical solution techniques are presented. (Thomas;1976;cass;b/w;58 min.)	HEC-173
THEORY AND CONCEPTS OF THE EQUILIBRIUM BED, ARMORING AND SEDIMENT ACCOUNTING CALCULATIONS USED BY HEC-6 Discussion of procedures used in HEC-6 to simulate changes in bed material gradation and bed armoring; concepts of equilibrium depth and active and inactive bed layers; example calculations. (Thomas;1982;cass;color;60 min.)	HEC-485
SIMULATION OF HYDRAULIC SORTING AND ARMORING The procedure used in HEC-6 for approximating hydraulic sorting and armoring of the streambed is presented. (Thomas;1976;cass;b/w;37 min.)	HEC-174
INPUT DATA REQUIREMENTS FOR HEC-6 Data requirements; data availability, input structure and format, discussion of what kinds of data go on the I, L, and N (sediment characteristics) cards; what are the variable default values and where did they come from; explain relative importance of the quality of input data to HEC-6. (Gee;1980;cass;color;58 min.)	HEC-448
INPUT DATA REQUIREMENTS FOR HEC-6 Input format; input for basic application; optional input and example application. (Thomas;1976;cass;b/w;60 min.)	HEC-175

TAPE
NUMBER

INTERPRETATION OF RESULTS FROM HEC-6 Printout sequence; optional output, error messages; special notes; discussion of how to evaluate the quality of your answers; when should HEC-6 be used to solve a problem; limitations with results; interpretation of general model behavior. (Thomas;1980;cass;color;61 min. & 31 min.)	HEC-449
INTERPRETATION OF RESULTS FROM HEC-6 Printout sequence; cross section computation; special notes; output review. (Thomas;1976;cass;b/w;59 min.)	HEC-176
CALIBRATION TECHNIQUES Techniques for calibrating n-values; estimating the computational interval; verifying the inflowing sediment load; adjustments to cross section geometry to establish initial conditions and simulate bank-full discharges; how and why to operate in the fixed-bed mode; numerical examples. (Williams;1980;cass;color;61 min. & 10 min.)	HEC-451
CALIBRATION TECHNIQUES Techniques for calibrating n-values; estimating the computational interval; verifying the inflowing sediment load; adjustments to cross section geometry to establish initial conditions of the channel and to simulate bank-fill discharge. (Thomas;1976;cass;b/w;58 min.)	HEC-177
SPECIAL CAPABILITIES OF HEC-6 Qualitatively introduce special program capabilities such as: dredging (X3 card usage, X5 card usage), fixed bed mode, dikes, levees, bank protection, bridges encroachments, reservoir studies, special print levels and restart capabilities. (Thomas;1980;cass;color;60 min.)	HEC-453
NEW CAPABILITIES OF HEC-6 Introduce gravel mining, interactive operation and plotted results capabilities. (MacArthur, Montalvo;1980;cass;color;61 min. & 31 min.)	HEC-454
DEBUGGING METHODS AND TROUBLESHOOTING Typical problems; print options; methods of debugging; typical bombs and problems with data. (Williams; 1980;cass;color;52 min.)	HEC-458
STREAM HYDRAULICS GRAPHICS PACKAGE FOR HEC-6 Introduction to the use and capabilities of the Stream Hydraulics Graphics Package as it relates to the HEC-6 computer program. (Montalvo;1980;cass;color;36 min.)	HEC-432
THEORY AND CONCEPTS OF THE EQUILIBRIUM BED, ARMORING AND SEDIMENT ACCOUNTING CALCULATIONS USED BY HEC-6 Discussion of procedures used in HEC-6 to simulate changes in bed material gradation and bed armoring; concepts of equilibrium depth and active and inactive bed layers; example calculations. (Thomas;1982;cass;color;60 min.)	HEC-485

TAPE
NUMBER

Case Studies

PROBLEMS RESULTING FROM SEDIMENT DEPOSITION IN RESERVOIRS

HEC-189

Specific case studies are presented to illustrate problems the Corps has encountered as a result of sediment deposition.

(Livesey;1976;cass;b/w;62 min. & 04 min.)

CASE STUDY

HEC-459

Relate case studies back to what program can or may not be able to do; emphasize assumptions that were made and methods that were used.

(Williams and Dyhouse;1980;cass;color;62 min., 32 min., & 7 min.)

Procedures to Conduct a Sediment Study

SUMMARY OF STEPS, METHODS, DATA AND PROCEDURES TO CONDUCT A SEDIMENT
HEC-6

HEC-462

(Williams;1980;cass;color;28 min.)

SPATIAL DATA MANAGEMENT

	TAPE NUMBER
INTRODUCTION TO SPATIAL DATA MANAGEMENT Background information on automated geographic information systems, what they are and how they have been used historically, and current activities within Corps. (Davis;1979;cass;color;58 min. & 12 min.)	HEC-409
CREATING GRID CELL DATA BANKS Discussion and illustration of the steps necessary to create a grid cell data bank. Discussion of encoding and file system, e.g., run length encoding, polygon encoding, and multivariable file. (Webb;1979;cass;color;29 min., 26 min. & 24 min.)	HEC-411
DATA BANK MANAGEMENT Creating derived variables such as hydrologic soil group, slope, etc., is discussed as well as use of the BANK program. (Webb;1979;cass;color;47 min.)	HEC-414
TOWN MEETING (TRAIL CREEK) Illustration of the capability of the Resource Information and Analysis program in a public forum for locating future industrial development in the Trail Creek watershed. Four different perspectives are presented: homeowners, industrialists, federal government and green grassers environmental group. (Burnham;1979;cass;color;50 min.)	HEC-415
HEC-SAM SYSTEM Integrated study management techniques based on spatial data management; XFPI and Survey Pilot Study Program. (Davis;1979;cass;color;52 min.)	HEC-416
THE ADAPT SYSTEM The structure and components of the ADAPT system (a system based on irregular triangular grids) are presented and applications are discussed. (Males;1979;cass;color;54 min. & 32 min.)	HEC-417
COORDINATED MANAGEMENT OF HYDROLOGIC AND ECONOMIC DATA The coordination in data gathering and analysis of hydrologic and economic data is discussed along with the roles that the HYDPAR, DAMCAL and ATODTA programs have in the coordination. (Davis;1979;cass;color;47 min.)	HEC-421
ROWLETT CREEK CASE STUDY The experience of the Ft. Worth District in using the HEC-SAM system is discussed. (M. Smith;1979;cass;color;56 min.)	HEC-422
ENVIRONMENTAL ASSESSMENTS USING SPATIAL DATA MANAGEMENT TECHNIQUES Tools and assessment techniques which are used for environmental evaluations are discussed. (Dangermond;1979;cass;color;60 min.)	HEC-423

	<u>TAPE NUMBER</u>
URBAN STORMWATER ANALYSIS Input requirements, output and interfaces with grid cell data banks for the STORM Program is discussed along with results from a recent application. (Feldman;1979;cass;color;51 min.)	HEC-425
WILMINGTON CASE STUDY The use of RIA and other programs by the Wilmington District for an environmental assessment of the Upper Dam and Roanoke River Basin is discussed. (Mitchell;1979;cass;color;44 min.)	HEC-426
RELATIONSHIP: HEC-SAM AND CORPS PLANNING Overview of relationship between spatial data management and Corps planning process/stages. (Davis;1979;cass;color;50 min.)	HEC-427
COMPUTER GRAPHICS AND HEC-SAM The use of pen plots, line printer plots, 35 mm film, microfiche, CRT's and color for data verification and display of analysis results is discussed. (Webb;1979;cass;color;31 min.)	HEC-428
LOCAL COMMUNITY'S USE OF SPATIAL DATA (GEOGRAPHIC INFORMATION SYSTEMS) The types of information required for local community planning based on DIME file information, traffic analysis zones (TAZ), etc., is presented. (L. Johnson;1979;cass;color;59 min. & 18 min.)	HEC-429

STATISTICAL METHODS

TAPE NUMBER

Flood Frequency Analysis

CONCEPTS AND PRINCIPLES OF FLOW FREQUENCY ANALYSIS

HEC-522

An introduction to the probability concepts of hydrologic phenomena, the distinction between risk and uncertainty, and a general approach to flow frequency analysis will be given. The frequency curve will be defined.

(Ford;1984;VHS;color)

STREAMFLOW FREQUENCY CONCEPTS

HEC-552

Concepts and principles of flow frequency analysis; overview of frequency analysis methods; interpretation of frequency curves; basic steps involved in development of frequency curves.

(Kubik;1985;VHS;color;60 min.)

ANALYTICAL FREQUENCY METHODS

HEC-010

Advantages of the analytical method; various model distributions; log-Pearson Type III characteristics and parameters, computation of frequency curve; expected probability adjustment.

(feldman;1974;cass;b/w;65 min.)

DETERMINATION OF DISCHARGE-FREQUENCY RELATIONSHIPS

HEC-507

Description of various techniques to determine flood-frequency relationships: Bulletin 17B, regional frequency, USGS regional equations, and design storms.

(Burnham;1983;cass;color;50 min.)

WEIGHTING PROCEDURE FOR GENERALIZED SKEW

HEC-544

Uncertainty in computed skew coefficient; mean square error; computation of weighted skew.

(Kubik;1985;VHS;color;60 min.)

RELIABILITY OF FREQUENCY ESTIMATES

HEC-545

Techniques for determining reliability; sampling errors of mean, standard deviation, and skew; statistical significance; confidence limits.

(Kubik;1985;VHS;color;60 min.)

RISK AND UNCERTAINTY

HEC-546

Examples of risk and uncertainty; bias in frequency estimates; expected probability adjustment; use of risk and uncertainty in project design.

(Davis;1985;VHS;color;60 min.)

EXPECTED PROBABILITY ADJUSTMENT

HEC-161

Philosophy and application of the expected probability adjustment; example.

(Beard;1976;cass;b/w;58 min.)

**TAPE
NUMBER**

Coincident Frequency Analysis

COINCIDENT FREQUENCY ANALYSIS

HEC-049

Objective of coincident frequency analysis; marginal and conditional probability distributions; total probability theorem; example.
(Peters;1975;cass;b/w;60 min. & 10 min.)

Regional Analysis

REGIONAL ANALYSIS

HEC-011

Nature and purpose of regional correlation analysis; regional analysis of analytical frequency statistics; regional analysis of unit graph parameters; selection of basin parameters; application of regression analysis; correlation coefficient and standard error of estimate.
(Kubik;1974;cass;b/w;57 min.)

APPLICATION OF MULTIPLE LINEAR REGRESSION

HEC-547

Applications in hydrologic analyses; formulation of regression models; effects of nonlinearities; transformations; interpreting results.
(Carl;1985;VHS;color;60 min.)

RELIABILITY OF REGRESSION RESULTS

HEC-548

Standard error of estimate; error in predicted Y values; confidence limits about regression line.
(Kubik;1985;VHS;color;60 min.)

DEVELOPMENT OF GENERALIZED SKEW COEFFICIENTS

HEC-549

Procedural steps in Bulletin 17B; problems with mapping skew; mean square error; case study - Delaware River Basin.
(Kubik;1985;VHS;color;60 min.)

RELIABILITY OF REGIONALIZED RESULTS

HEC-550

Worth of regionalized results, sensitivity of process to regional values.
(Dawdy;1985;VHS;color:60 min.)

Computer Program WATSTORE

RETRIEVAL OF DATA FROM WATSTORE

HEC-234

Available data; statistical and frequency routines used with data; strategies for using WATSTORE in a frequency study.
(Hayes;1978;cass;b/w;59 min.)

URBAN HYDROLOGY

TAPE NUMBER

Effects of Urbanization

EFFECT OF BASIN DEVELOPMENT ON FREQUENCY CURVES

HEC-508

Effect of basin development on the hydrologic system. Describe how urbanization, reservoirs, levees and channel modifications impact on the frequency curve.

(Burnham;1983;cass;color;44 min.)

EFFECT OF URBANIZATION

HEC-509

Discuss the effects of urbanization on the hydrologic system and describe the method of analysis using the kinematic wave method.

(DeVries;1983;cass;color;52 min.)

Methods of Analysis

METHODS OF ANALYZING QUANTITY OF URBAN STORM RUNOFF

HEC-129

Introduction to various methods suited for determining runoff from urban watersheds; discussion of use of the "rational" method; data considerations and availability; degree of refinement necessary considering specific objectives, i.e., peak flows, single events, continuous hydrographs, volume.

(Davis;1975;cass;b/w;71 min. & 14 min.)

DEVELOPMENT OF FREQUENCY CURVES IN AREAS UNDERGOING URBANIZATION

HEC-131

Statistical considerations and assumptions in frequency analysis of rainfall and runoff as they pertain to watersheds undergoing urbanization; specific methods available for urbanized areas; results of previous investigations; use of rainfall-runoff models to develop or modify frequency curves; rainfall frequency; storm frequency.

(Kubik;1975;cass;b/w;71 min.)

DETERMINATION OF KINEMATIC WAVE PARAMETERS

HEC-510

Techniques for developing kinematic wave parameters and application using HEC-1.

(DeVries;1983;cass;color;62 min.)

CHANGES IN UNIT HYDROGRAPH CHARACTERISTICS DUE TO URBANIZATION

HEC-132

Use of HEC-1 to model an urban watershed; description of parameter modifications required to simulate an urbanized watershed, changes in unit graph and loss rate characteristics due to urbanization; Denver criteria; Tracor criteria.

(Peters;1975;cass;b/w;71 min. & 20 min.)

CHANGES IN ROUTING CHARACTERISTICS DUE TO URBANIZATION

HEC-134

Application of HEC-1 to model changes in drainage system of an urbanizing watershed; discussion of which routing methods to use; selection of modified routing coefficients for urban conditions; adaptations to simulate closed conduit systems; hydraulic considerations.

(Bonner;1975;cass;b/w;70 min. & 23 min.)

WATER RESOURCE PLANNING

TAPE NUMBER

Data Storage System

USE OF THE HEC DATA STORAGE SYSTEM FOR WATER AND PLANNING STUDIES
Capability of HEC system HECDSS and water control software;
application of HECDSS: use of functions, macros and menus.
(Pabst;1983;cass;color;62 min.)

HEC-467

CAPABILITIES OF DISPLAY
Program options and applications.
(Montalvo;1983;cass;color;52 min.)

HEC-470

Planning Models

HYDROLOGIC ENGINEERING MODELS
The various categories of hydrologic models are discussed. A
selection of statistical, single storm event simulation, continuous
synthesis and operation and analysis models are described.
(Davis;1975;cass;b/w;61 min.)

HEC-122

Formulation

FLOOD CONTROL ALTERNATIVES
Purpose of flood loss management; types and effects of flood control
alternatives; selecting and evaluating flood control alternatives.
(Davis;1975;cass;b/w;60 min. & 15 min.)

HEC-068

METHODS FOR HYDROLOGIC EVALUATION OF FLOOD CONTROL SYSTEMS
Developing flow data for evaluation of flood control system
performance; use of historic data; design storms; single event
modeling; period of record analysis.
(Davis;1983;cass;color;58 min.)

HEC-471

Economic Analysis

ECONOMIC EVALUATION OF FLOOD CONTROL ALTERNATIVES
Basic economic concepts, damage function derivation and manipulation;
benefits categorization, selection of representative hydrology.
(Davis;1975;cass;b/w;60 min. & 06 min.)

HEC-080

WATER SUPPLY

TAPE NUMBER

Methods of Analysis

- STATISTICAL TECHNIQUES FOR WATER SUPPLY POTENTIAL HEC-302
Flow-duration, low-flow frequency techniques for evaluating surface water potential.
(Kubik;1978;cass;b/w;62 min. & 27 min.)
- RESERVOIR YIELD ANALYSIS HEC-306
Techniques for determining reservoir yield; mass diagrams; nonsequential mass curve analysis; sequential analysis, stochastic techniques.
(Morris;1978;cass;b/w;63 min. & 11 min.)
- ESTIMATING LOW-FLOW DATA FOR UNGAGED BASINS HEC-540
Estimating flow and frequency for ungaged watersheds; use of other data sources.
(Kubik;1985;VHS;color;60 min.)
- STOCHASTIC ANALYSIS OF DROUGHT PHENOMENA HEC-543
Probabilistic models; stochastic process; drought statistics, HEC-4 monthly streamflow operation.
(Goldman;1985;VHS;color;60 min.)

Water Demand Forecasting

- A WATER DEMAND FORECASTING MODEL (DEMAND) HEC-308
Program description and function; input requirements; output; application to Corps study.
(Sonnen;1978;cass;b/w;52 min. & 16 min.)

Water Balance

- HYDROLOGY OF WATER SUPPLY HEC-541
Surface and ground water sources; droughts and floods; surface water storage and withdrawal; shortages and surpluses.
(Feldman;1985;VHS;color;60 min.)
- DEVELOPMENT OF A WATER BALANCE HEC-390
Why and how a thorough hydrologic water balance is conceptualized and performed; case study middle Rio Grande at Albuquerque.
(Johnson;1979;cass;color;57 min.)
- APPLICATION OF SPREADSHEETS SOFTWARE TO WATER BALANCE DEVELOPMENT HEC-542
Structure, capability, and use of microcomputer spreadsheet and database for water supply and use data.
(Johnson;8/20/85;VHS;color;60 min.)

TAPE
NUMBER

Water Quality

WATER QUALITY CONSIDERATIONS FOR WATER SUPPLY

HEC-288

Impurities in water; chemical and bacteriological characteristics of water; water quality standards for drinking water supplies; water quality for agricultural use; quality for industrial use.

(Smith;1978;cass;b/w;61 min. & 33 min.)

Formulation

FORMULATION OF WATER SUPPLY PLANS

HEC-296

Considerations in formulating alternative plans; strategies for developing alternatives; being responsive to identified needs.

(Dixon;1978;cass;b/w;62 min. & 04 min.)

Agricultural Water Supply

ESTIMATION OF FUTURE AGRICULTURAL WATER NEEDS

HEC-291

Predicting crop's water requirements; crop evapotranspiration factors affecting evapotranspiration; seasonal and peak requirements.

(Pruitt;1978;cass;b/w;54 min. & 28 min.)

Water Conservation

WATER CONSERVATION

HEC-293

Water conservation as a way to reduce water demand; effectiveness of water conservation; case studies; water conservation in State and Federal planning.

(Bollman;1978;cass;b/w;61 min. & 56 min.)

Case Studies

WATER REUSE: PHOENIX URBAN STUDY

HEC-295

Case study of the consideration of water reuse in the Phoenix Urban Study.

(Dixon;1978;cass;b/w;62 min.)

WATER QUALITY

TAPE NUMBER

Basic Concepts and Methods

- GENERAL CONCEPTS OF WATER QUALITY HEC-091
Define water quality and discuss water quality parameters, sources of pollution, significance of receiving water standards versus effluent standards, and beneficial uses of water.
(Willey;1975;cass;b/w;67 min.)
- WATER QUALITY DETERMINATIONS FOR STREAMS HEC-092
General concepts and example application of manual calculation methods for analysis of BOD, and analysis of a DO profile for streams' channels.
(Willey;1975;cass;b/w;67 min.)
- STREAM TEMPERATURE DETERMINATIONS HEC-093
General concepts and example application of a manual calculation method for analysis of a stream temperature profile.
(Willey;1975;cass;b/w;64 min.)
- FISH HEC-152
The characteristics of several species of fish are described. Environmental changes affecting their production and mortality are presented.
(Jenkins;1976;cass;b/w;65 min. & 03 min.)
- WATER QUALITY CONSIDERATION FOR WATER SUPPLY HEC-288
Impurities in water; chemical and bacteriological characteristics of water; water quality standards for drinking water supplies; water quality for agricultural use; quality for industrial use.
(Smith;1978;cass;b/w;61 min. & 33 min.)
- WATER QUALITY CONSIDERATIONS HEC-084
Important quality parameters; water quality considerations in reservoir operations; methods of analysis available.
(Willey;1975;cass;b/w;68 min. & 13 min.)
- METHODS OF ANALYZING QUALITY OF URBAN RUNOFF HEC-137
Techniques used to evaluate water quality problems; state-of-the-art; HEC-138
survey of available computer models (STORM, EPA, and others);
applicability of models.
(Chen;1975;cass;b/w;70 min. & 11 min.)

TAPE
NUMBER

Computer Program STORM

- INTRODUCTION OF WATER QUALITY OF URBAN RUNOFF HEC-136
Water Quality problems; parameters and their interrelationships;
sources of pollutants; washoff phenomena; transport of pollutants;
data availability and other considerations.
(Chen;1975;cass;b/w;55 min.)
- INTRODUCTION TO STORM WATER WATER QUALITY ANALYSIS HEC-215
Water quality problems; pertinent water quality parameters, source of
pollutants; washoff functions; transport of pollutants; modeling storm
water quality; dry weather flow.
(Abbott;1977;cass;b/w;60 min.)
- GUIDELINES FOR DATA COLLECTION FOR WATER QUALITY MODELS HEC-140
Suggested procedures for collecting data necessary to operate the
models, data needs (what to sample), frequency of sampling; time and
spatial consideration; associated costs; impact of adequate sampling
on study results.
(Willey;1975;cass;b/w;70 min. & 41 min.)
- USE OF "STORM" FOR WATER QUALITY STUDIES HEC-142
Methods used in STORM for determining urban storm runoff; estimation
of input parameters; default values; data preparation.
(Abbott;1975;cass;b/w;67 min.)
- INPUT FOR STORM - QUANTITY AND QUALITY HEC-216
Input data requirements; structure of input deck; data card
preparation; examples; output analysis.
(Abbott;1977;cass;b/w;62 min.)
- URBAN STORMWATER ANALYSIS HEC-425
Input requirements, output and interfaces with grid cell data banks
for the STORM Program is discussed along with results from a recent
application.
(Feldman;1979;cass;color;51 min.)

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